<u>Claims</u>

1. A method for determining the position of a rotating component of a claw pole generator (1), which is operated in the R-S-T-system and whose regulation requires the transformation of the stator values from the R-S-T-system into the d, q-system and vice versa, characterized in that the claw pole generator (1) as an overall system (15) is divided into a non-detectable subsystem (18) and a detectable subsystem (19), which contains a filter element (20) and supplies output values (17).

2. The method according to claim 1, characterized in that the detectable subsystem (19) contains a Kalman-Bucy filter element (20), which estimates the status values of the detectable subsystem (19).

3. The method according to claim 1, characterized in that the detectable subsystem (19) contains a status detector, which recalculates status values of the detectable subsystem (19) after a status change.

4. The method according to claim 1, characterized in that the electric machine (1) is divided by a transformation matrix T into a non-detectable subsystem (18) and a detectable subsystem (19).

5. The method according to claim 2, characterized in that an L-matrix (21) in the filter element (20) of the detectable subsystem (19) is determined based on the optimization of a quadratic efficiency rating

$$J(u) = \int_{t_0}^{t_f} \left[x^T(t) Q x(t) + u^T(t) R u(t) \right] dt$$

6. The method according to claim 2, characterized in that the status values (9) of the detectable subsystem (19) of the overall system (15) of the claw pole machine (1) are estimated by means of the filter element (20).

7. The method according to claim 2 or 3, characterized in that the status values of the non-detectable subsystem (18) are calculated based on the estimated and calculated status values of the detectable subsystem (19).

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8. The method according to claim 6 or 7, characterized in that the estimated status values and the calculated status values of the subsystems (18, 19) are inverse transformed through combination with a transformation matrix T.

10   9. The method according to claim 6, characterized in that the status values (9) include the transformed stator currents of the d, q-system, the angular frequency ω, and the magnet wheel angle of the rotor of the claw pole machine (1).

10. The method according to claim 1, characterized in that in order to determine
15   the rotor starting position, a chronologically variable voltage source (32) is disposed in the exciter circuit (2, 32) of the claw pole machine (1), and a measurement (33, 34) of the phase voltages (5) of the stator winding (4) is executed.